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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/043,010	01/11/2002	Stanford R. Ovshinsky	2076	6131
24963	7590	02/14/2005		
ENERGY CONVERSION DEVICES, INC. 2956 WATERVIEW DRIVE ROCHESTER HILLS, MI 48309				
EXAMINER ZERVIGON, RUDY				
ART UNIT		PAPER NUMBER		
1763				

DATE MAILED: 02/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/043,010

Applicant(s)

OVSHINSKY, STANFORD R.

Examiner

Rudy Zervigon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Oath/Declaration

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

There is no oath or declaration present.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “deposition chamber” must be shown or the feature canceled from the claims. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will

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be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 11, 24 are objected to because of the following informalities: The claims require “which is nonreactive said process gases”. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-5, 8-11, 13-17, and 20-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Drage; David J. (US 4,590,042 A). Drage teaches a gas distribution cathode (13; Figure 1; column 2; lines 26-68; column 4; lines 17-25) for plasma (abstract) enhanced deposition of semiconductor materials onto one or more webs (“wafer”; throughout) of substrate (“wafer”; throughout) material comprising: (a) a cathode body (13; Figure 1; column 2; lines 26-68; column 4; lines 17-25); (b) a process gas distribution system (34, 35; Figure 4; column 3; line 65 - column 4; line 29) integrated within said cathode body (13; Figure 1; column 2; lines 26-68; column 4; lines 17-25) and including process gas outlets (35; Figure 4; column 3; line 65 - column 4; line 29) which are evenly dispersed on planar surfaces of said cathode body (13; Figure 1; column 2; lines 26-68; column 4; lines 17-25); and (c) one or more gas dispersion

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plates (15; Figure 1; column 2; lines 26-68) covering said gas outlets (35; Figure 4; column 3; line 65 - column 4; line 29) so as to prevent direct, line-of-sight travel of process gas from said gas outlets (35; Figure 4; column 3; line 65 - column 4; line 29) to a substrate ("wafer"; throughout) upon which semiconductor material is to be deposited, as claimed by claim 1

Drage further teaches:

- i. The gas distribution cathode (13; Figure 1; column 2; lines 26-68; column 4; lines 17-25) of claim 1, wherein said process gas distribution system (34, 35; Figure 4; column 3; line 65 - column 4; line 29) includes at least one primary process gas distribution manifold (22; Figure 1,2), as claimed by claim 2
- ii. The gas distribution cathode (13; Figure 1; column 2; lines 26-68; column 4; lines 17-25) of claim 2, wherein said process gas distribution system (34, 35; Figure 4; column 3; line 65 - column 4; line 29) includes one or more secondary process gas distribution manifolds (21; Figure 1,2) connected to said primary process gas distribution manifold (22; Figure 1,2), as claimed by claim 3
- iii. The gas distribution cathode (13; Figure 1; column 2; lines 26-68; column 4; lines 17-25) of claim 3, wherein said gas outlets (35; Figure 4; column 3; line 65 - column 4; line 29) are connected to said secondary process gas distribution manifolds (21; Figure 1,2), as claimed by claim 4
- iv. The gas distribution cathode (13; Figure 1; column 2; lines 26-68; column 4; lines 17-25) of claim 1, wherein said gas outlets (35; Figure 4; column 3; line 65 - column 4; line 29) are evenly positioned across two opposite surfaces of said cathode body (13; Figure 1; column 2; lines 26-68; column 4; lines 17-25), as claimed by claim 5

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- v. The gas distribution cathode (13; Figure 1; column 2; lines 26-68; column 4; lines 17-25) of claim 1, further including a spent gas evacuation system (37, 42, 41, and 31; Figure 4), as claimed by claim 8
- vi. The gas distribution cathode (13; Figure 1; column 2; lines 26-68; column 4; lines 17-25) of claim 8, wherein said spent gas evacuation system (37, 42, 41, and 31; Figure 4) includes spent gas inlets (37; Figure 4) evenly positioned along at least one peripheral edge of said cathode body (13; Figure 1; column 2; lines 26-68; column 4; lines 17-25), as claimed by claim 9
- vii. The gas distribution cathode (13; Figure 1; column 2; lines 26-68; column 4; lines 17-25) of claim 9, wherein said spent gas inlets (37; Figure 4) are connected to a spent gas collection/removal manifold (23; Figure 2) system, as claimed by claim 10
- viii. The gas distribution cathode (13; Figure 1; column 2; lines 26-68; column 4; lines 17-25) of claim 1, wherein said cathode body (13; Figure 1; column 2; lines 26-68; column 4; lines 17-25), said process gas outlets (35; Figure 4; column 3; line 65 - column 4; line 29) and said gas dispersion plates (15; Figure 1; column 2; lines 26-68) are formed from a metal (column 5; lines 29-35) or metallic alloy which is nonreactive said process gases, as claimed by claim 11 – Applicant’s claim requirement of “nonreactive said process gases” is a claim requirement of intended use. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably

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distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).

- ix. A deposition chamber (volume confined by 14; Figure 1) for the plasma (abstract) enhanced deposition of semiconductor materials onto one or more webs ("wafer"; throughout) of substrate ("wafer"; throughout) material, said chamber (volume confined by 14; Figure 1) including: a gas distribution cathode (13; Figure 1; column 2; lines 26-68; column 4; lines 17-25) comprising: (a) a cathode body (13; Figure 1; column 2; lines 26-68; column 4; lines 17-25); (b) a process gas distribution system (34, 35; Figure 4; column 3; line 65 - column 4; line 29) integrated within said cathode body (13; Figure 1; column 2; lines 26-68; column 4; lines 17-25) and including process gas outlets (35; Figure 4; column 3; line 65 - column 4; line 29) which are evenly dispersed on planar surfaces of said cathode body (13; Figure 1; column 2; lines 26-68; column 4; lines 17-25); and (c) one or more gas dispersion plates (15; Figure 1; column 2; lines 26-68) covering said gas outlets (35; Figure 4; column 3; line 65 - column 4; line 29) so as to prevent direct, line-of-sight travel of process gas from said gas outlets (35; Figure 4; column 3; line 65 - column 4; line 29) to a substrate ("wafer"; throughout) upon which semiconductor material is to be deposited, as claimed by claim 13
- x. The deposition chamber (volume confined by 14; Figure 1) of claim 13, wherein said process gas distribution system (34, 35; Figure 4; column 3; line 65 - column 4; line 29) includes at least one primary process gas distribution manifold (22; Figure 1,2), as claimed by claim 14

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- xi. The deposition chamber (volume confined by 14; Figure 1) of claim 14, wherein said process gas distribution system (34, 35; Figure 4; column 3; line 65 - column 4; line 29) includes one or more secondary process gas distribution manifolds (21; Figure 1,2) connected to said primary process gas distribution manifold (22; Figure 1,2), as claimed by claim 15
- xii. The deposition chamber (volume confined by 14; Figure 1) of claim 15, wherein said gas outlets (35; Figure 4; column 3; line 65 - column 4; line 29) are connected to said secondary process gas distribution manifolds (21; Figure 1,2), as claimed by claim 16
- xiii. The deposition chamber (volume confined by 14; Figure 1) of claim 13, wherein said gas outlets (35; Figure 4; column 3; line 65 - column 4; line 29) are evenly positioned across two opposite surfaces of said cathode body (13; Figure 1; column 2; lines 26-68; column 4; lines 17-25), as claimed by claim 17
- xiv. The deposition chamber (volume confined by 14; Figure 1) of claim 13, wherein said cathode (13; Figure 1; column 2; lines 26-68; column 4; lines 17-25) further including a spent gas evacuation system (37, 42, 41, and 31; Figure 4), as claimed by claim 20
- xv. The deposition chamber (volume confined by 14; Figure 1) of claim 20, wherein said spent gas evacuation system (37, 42, 41, and 31; Figure 4) includes spent gas inlets (37; Figure 4) evenly positioned along at least one peripheral edge of said cathode body (13; Figure 1; column 2; lines 26-68; column 4; lines 17-25), as claimed by claim 21
- xvi. The deposition chamber (volume confined by 14; Figure 1) of claim 9, wherein said spent gas inlets (37; Figure 4) are connected to a spent gas collection/removal manifold (23; Figure 2) system, as claimed by claim 22

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- xvii. The deposition chamber (volume confined by 14; Figure 1) of claim 13, wherein said cathode body (13; Figure 1; column 2; lines 26-68; column 4; lines 17-25), said process gas outlets (35; Figure 4; column 3; line 65 - column 4; line 29) and said gas dispersion plates (15; Figure 1; column 2; lines 26-68) are formed from a metal (column 5; lines 29-35) or metallic alloy which is nonreactive said process gases, as claimed by claim 23

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 6, 7, 12, 18, 19, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Drage; David J. (US 4,590,042 A) in view of Dhindsa; Rajinder et al (US 6,786,175 B2).

Drage is discussed above. Drage does not teach:

- i. The gas distribution cathode (13; Figure 1; column 2; lines 26-68; column 4; lines 17-25) of claim 5, wherein said gas outlets (35; Figure 4; column 3; line 65 - column 4; line 29) are evenly positioned from 1 to 4 inches apart, as claimed by claim 6
- ii. The gas distribution cathode (13; Figure 1; column 2; lines 26-68; column 4; lines 17-25) of claim 6, wherein said gas outlets (35; Figure 4; column 3; line 65 - column 4; line 29) are evenly positioned from 2 to 3 inches apart, as claimed by claim 7
- iii. The gas distribution cathode (13; Figure 1; column 2; lines 26-68; column 4; lines 17-25) of claim 11, wherein said cathode body (13; Figure 1; column 2; lines 26-68; column 4; lines 17-25), said process gas outlets (35; Figure 4; column 3; line 65 - column 4; line 29)

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and said gas dispersion plates (15; Figure 1; column 2; lines 26-68) are formed from stainless steel, as claimed by claim 12

- iv. The deposition chamber (volume confined by 14; Figure 1) of claim 17, wherein said gas outlets (35; Figure 4; column 3; line 65 - column 4; line 29) are evenly positioned from 1 to 4 inches apart, as claimed by claim 18
- v. The deposition chamber (volume confined by 14; Figure 1) of claim 18, wherein said gas outlets (35; Figure 4; column 3; line 65 - column 4; line 29) are evenly positioned from 2 to 3 inches apart, as claimed by claim 19
- vi. The deposition chamber (volume confined by 14; Figure 1) of claim 23, wherein said cathode body (13; Figure 1; column 2; lines 26-68; column 4; lines 17-25), said process gas outlets (35; Figure 4; column 3; line 65 - column 4; line 29) and said gas dispersion plates (15; Figure 1; column 2; lines 26-68) are formed from stainless steel, as claimed by claim 24

Dhindsa teaches a stainless steel cathode showerhead (310; Figure 3) for plasma operations (column 8; lines 14-33) including process gas distribution holes (354; Figure 3) with optimal spacing as taught by Dhindsa.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Drage to use stainless steel material for his Drage's dispersion plates (15; Figure 1; column 2; lines 26-68) and for Drage to optimize the dimension between Drage's gas outlets (35; Figure 4; column 3; line 65 - column 4; line 29) as taught by Dhindsa.

Motivation for Drage to use stainless steel material for his Drage's dispersion plates (15; Figure 1; column 2; lines 26-68) and for Drage to optimize the dimension between Drage's gas outlets

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(35; Figure 4; column 3; line 65 - column4; line 29) as taught by Dhindsa is to enhance transfer heat through Drange's dispersion plates as taught by Dhindsa (column 8; lines 14-33) and to optimize the gas flow of Drange's process as taught by Dhindsa (column6; lines 15-30). Further, it is well established that changes in apparatus dimensions are within the level of ordinary skill in the art.(Gardner v. TEC Systems, Inc. , 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied , 469 U.S. 830, 225 USPQ 232 (1984); In re Rose , 220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); See MPEP 2144.04)

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

US 20010027026 A1

US 6475563 B2

US 6432831 B1

US 6245192 B1

US 6189485 B1

US 6161500 A

US 6148761 A

US 6109209 A

US 5919332 A

US 5900103 A

US 5792261 A

US 5766364 A

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US 5580822 A

US 5567267 A

US 5480678 A

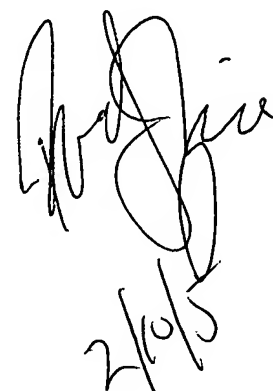
US 5010842 A

US 4820371 A

US 4595484 A

US 4209357 A

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272.1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (703) 872-9306. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Gregory L. Mills, at (571) 272-1439.



2/10/15